

2812

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Satayadev Patel, et al.

Art Unit: 2812

Serial No.: 10/005,308

Examiner: Not Yet Assigned

Filed: December 3, 2001

For: **METHODS FOR DEPOSITING, RELEASING AND PACKAGING MICRO-ELECTROMECHANICAL DEVICES ON WAFER SUBSTRATES**

**INFORMATION DISCLOSURE STATEMENT**  
**PURSUANT TO 37 CFR 1.97(b)**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-145

Sir:

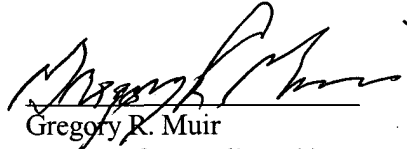
The attention of the Patent and Trademark Office is hereby directed to the documents listed on the attached PTO Form 1449. Copies of the cited references are enclosed.

No fee or certification is required in connection with this Information Disclosure Statement, since it is being submitted prior to the last of (1) issuance of a first official action on the merits and (2) expiration of the three month period following filing of the above-captioned application.

The above information is presented so that the Patent and Trademark Office can determine any materiality thereof to the claimed invention. It is respectfully requested that the information be considered during the prosecution of this application and that the cited documents be listed on the front page of any patent issuing from this application.

The Patent Office is authorized to charge our Deposit Account No. 501516 for any fee which it deems to be required to effect consideration of this statement.

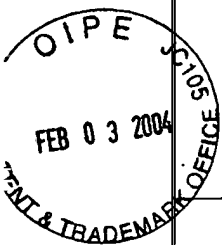
Respectfully submitted,

A handwritten signature in black ink, appearing to read "Gregory R. Muir", is written over a horizontal line.

Gregory R. Muir  
Attorney for Applicant(s)  
Registration No. 35,293

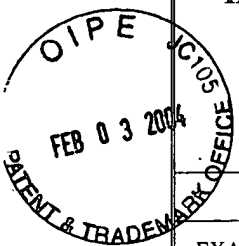
REFLECTIVITY, INC.  
350 Potrero Avenue  
Sunnyvale, CA 94085

Tel: 408) 737-8100 x. 136  
Fax: 408-737-8153



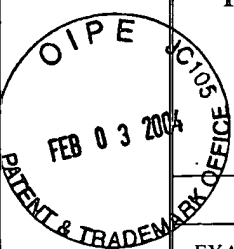
<b>INFORMATION DISCLOSURE CITATION</b>  <b>PTO-1449</b>  SHEET 1 OF 6			ATTY. DOCKET NO. P19-US		SERIAL NO. 10/005,308		
			APPLICANT Satayadev R. Patel, et al.				
			FILING DATE 12/03/01		GROUP 2812		
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
	4,190,488	02/26/80	Winters				
	4,310,380	01/12/82	Flamn, et al.				
	4,498,953	02/12/85	Cook, et al.				
	4,740,410	04/26/88	Muller, et al.				
	4,789,426	12/06/88	Pipkin				
	5,330,301	07/19/94	Brancher				
	5,672,242	09/30/97	Jen				
	5,726,480	03/10/98	Pister				
	5,753,073	05/19/98	Jen				
	5,835,256	11/10/98	Huibers				
<b>FOREIGN PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	EP 0 822 582 A2	28.07.1997	EP			<input type="checkbox"/>	<input type="checkbox"/>
	EP 0 822 584 A2	28.07.1997	EP			<input type="checkbox"/>	<input type="checkbox"/>
	EP 0 838 839 A2	25.09.1997	EP				
	EP 0 878 824 A2	24.04.1998	EP				
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	PCT-WO 00/52740, Filing date 6 March 2000.						
	PCT-WO 98/05605, Filing date 17 July 1997						
	PCT-WO 98/13856, Filing date 22 September 1997						
	PCT-WO 98/32163, Filing date 22 January 1998						
	PCT-WO 99/01887, Filing date 6 July 1998						
	PCT-WO 99/03313, Filing date 8 July 1998						
	PCT-WO 99/49506, Filing date 16 March 1999						
EXAMINER				DATE CONSIDERED			

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



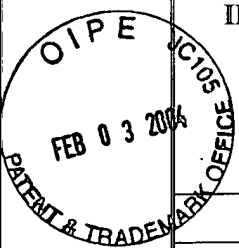
<b>INFORMATION DISCLOSURE CITATION</b>  <b>PTO-1449</b>  SHEET 2 OF 6			ATTY. DOCKET NO. P19-US		SERIAL NO. 10/005,308		
			APPLICANT Satayadev R. Patel, et al.				
			FILING DATE 12/03/01		GROUP 2812		
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
	6,051,503	04/18/00	Bhardwaj, et al.				
	5,579,179	11/26/96	Ji, et al.				
	5,606,452	02/25/97	Min				
	5,637,517	06/10/97	Choi				
	5,677,785	10/14/97	Koo, et al.				
	5,690,839	11/25/97	Min				
	5,702,569	12/30/97	Park, et al.				
	5,706,122	01/06/98	Lim				
	5,735,026	04/07/98	Min				
	5,774,256	06/30/98	Min, et al.				
<b>FOREIGN PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
						<input type="checkbox"/>	<input type="checkbox"/>
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	Kyu-Ho Hwang, et al., DESIGN AND FABRICATION OF THE THIN-FILM MICROMIRROR ARRAY-ACTUATED FOR LARGE PROJECTION DISPLAYS, November 1998, pp. S467-S470.						
	J.A. Walker, et al., A SILICON OPTICAL MODULATOR WITH 5 MHZ OPERATION FOR FIBER-IN-THE-LOOP APPLICATIONS, 1995, pp. 285-288.						
	C.G. Khan Malek, et al., ADHESION PROMOTION BETWEEN POLY(METHYLMETHACRYLATE) AND METALLIC SURFACES FOR LIGA EVALUATED BY SHEAR STRESS MEASUREMENTS, 1998, pp. 3543-3546.						
	C.H. Mastrangelo, ADHESION-RELATED FAILURE MECHANISMS IN MICROMECHANICAL DEVICES, 1997, pp. 223-238.						
	M.P. de Boer, et al., ADHESION, ADHESION HYSTERESIS AND FRICTION IN MEMS UNDER CONTROLLED HUMIDITY AMBIENTS, 1998, pp. 127-129.						
	Uthara Srinivasan, et al., ALKYLTRICHLOROSILANE-BASED SELF-ASSEMBLED MONOLAYER FILMS FOR STICTION REDUCTION IN SILICON MICROMACHINES, 1998, pp. 252-260.						
	Roya Maboudian, ANTI-STICTION COATING FOR SURFACE MICROMACHINES, 1998, pp. 108-113.						
EXAMINER			DATE CONSIDERED				

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



<b>INFORMATION DISCLOSURE CITATION</b>  <b>PTO-1449</b>  SHEET 3 OF 6			ATTY. DOCKET NO. P19-US		SERIAL NO. 10/005,308		
			APPLICANT Satayadev R. Patel, et al.				
			FILING DATE 12/03/01		GROUP 2812		
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
	5,789,264	08/04/98	Chung				
	5,822,109	10/13/98	Jeon				
	5,834,163	11/10/98	Min, et al.				
	5,835,293	11/10/98	Min, et al.				
	5,841,569	11/24/98	Kim				
	5,859,724	01/12/99	Nam				
	5,877,889	03/02/99	Um, et al.				
	5,900,998	05/04/99	Kim, et al.				
	5,917,645	06/29/99	Min, et al.				
	5,920,422	07/06/99	Kim				
<b>FOREIGN PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
						<input type="checkbox"/>	<input type="checkbox"/>
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	Michael R. Houston, et al., AMMONIM FLUORIDE ANTI-STICTION TREATMENTS FOR POLYSILICON MICROSTRUCTURES, 1995, pp. 210-214.						
	Roya Maboudian, et al., CRITICAL REVIEW: ADHESION IN SURFACE MICROMECHANICAL STRUCTURES, 1997. pp. 1-20.						
	Raj B. Apte, et al., DEFORMABLE GRATING LIGHT VALVES FOR HIGH RESOLUTION DISPLAYS, 1994, pp. 1-6.						
	P.F. Man, et al., ELIMINATION OF POST-RELEASE ADHESION IN MICROSTRUCTURES USING THIN CONFORMAL FLUOROCARBON FILMS, 1996, PP. 55-60.						
	Donna Cowell Senft, et al., FRICTION AND WEAR IN SURFACE MICROMACHINED TRIBOLOGICAL TEST DEVICES, PP. 31-38						
	P.R.Scheeper, et al., INVESTIGATION OF ATTRACTIVE FORCES BETWEEN PECVD SILICON NITRIDE MICROSTRUCTURES AND AN OXIDIZED SILICON SUBSTRATE, 1992, PP. 231-239.						
	Steven A. Henck, LUBRICATION OF DIGITAL MICROMIRROR DEVICES, 1997, pp. 239-247.						
EXAMINER			DATE CONSIDERED				

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

**INFORMATION DISCLOSURE  
CITATION****PTO-1449**

SHEET 4 OF 6

ATTY. DOCKET NO.

P19-US

SERIAL NO.

10/005,308

APPLICANT Satayadev R. Patel, et al.

FILING DATE 12/03/01

GROUP 2812

**U.S. PATENT DOCUMENTS**

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	5,930,025	07/27/99	Min			
	5,937,271	08/10/99	Min			
	5,991,064	11/23/99	Kim			
	6,104,525	08/15/00	Min			
	6,136,390	10/24/00	Park, et al.			
	6,203,715B1	03/20/01	Kim, et al.			
	6,204,080B1	03/20/01	Hwang			

**FOREIGN PATENT DOCUMENTS**

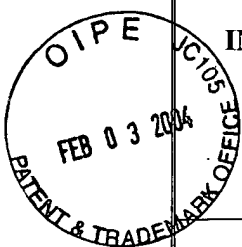
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
						<input type="checkbox"/>	<input type="checkbox"/>

**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)**

	Uthara Srinivasan, et al., LUBRICATION OF POLYSILICON MICROMECHANISMS WITH SELF-ASSEMBLED MONOLAYERS, 1998, pp. 156-161.
	M.P. de Boer, et al., MEASURING AND MODELING ELECTROSTATIC ADHESION IN MICROMACHINES, 1997, pp. 229-232.
	In-Ha Sung, et al., MICRO/NANO-TRIBOLOGICAL CHARACTERISTICS OF SELF-ASSEMBLED MONOLAYER AND ITS APPLICATION IN NANO-STRUCTURE FABRICATION, pp.808-818.
	H. Zarrad, et al., OPTIMIZATION OF LUBRICANTS FOR SILICA MICROMOTORS, 1995, pp.598-600.
	N.D. Shinn, et al., ORIGINS OF VISCOELASTIC DISSIPATION IN SELF-ASSEMBLED ORGANIC MONOLAYERS, 1998, pp. 169-175.
	Keren Deng, et al., PERFORMANCE IMPACT OF MONOLAYER COATING OF POLYSILICON MICROMOTORS, 1995, pp. 368-373.
	C.Carraro, et al., SELECTIVE METALLIZATION OF SILICON MICROMECHANICAL DEVICES, 2002, pp. 2583-2588.

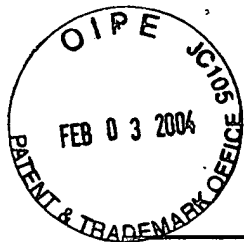
EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



<b>INFORMATION DISCLOSURE CITATION</b>  <b>PTO-1449</b>  SHEET 5 OF 6		ATTY. DOCKET NO. P19-US		SERIAL NO. 10/005,308			
		APPLICANT Satayadev R. Patel, et al.					
		FILING DATE 12/03/01		GROUP 2812			
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
<b>FOREIGN PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
						<input type="checkbox"/>	<input type="checkbox"/>
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	Uthara Srinivasan et al., SELF-ASSEMBLED FLUOROCARBON FILM FOR ENHANCED STICTION REDUCTION, 1997, pp. 1399-1402.						
	Michael R. Houston, et al., SELF-ASSEMBLED MONOLAYER FILMS AS DURABLE ANTI-STICTION COATINGS FOR POLYSILICON MICROSTRUCTURES, 1996, pp. 42-47.						
	ZHAO Yapu, STICTION AND ANTI-STICTION IN MEMS AND NEMS, 2002, pp. 1-10.						
	Niels Tas, et al., STICTION IN SURFACE MICROMACHING, 1996, pp. 385-397.						
	Roya Maboudian, et al., STICTION REDUCTION PROCESSES FOR SURFACE MICROMACHINES, 1997, pp. 215-221.						
	K. Komvopoulos, SURFACE ENGINEERING AND MICROTRIBOLOGY FOR MICROELECTROMECHANICAL SYSTEMS, 1996, pp. 305-327.						
	K. Komvopoulos, SURFACE TEXTURING AND CHEMICAL TREATMENT METHODS FOR REDUCING HIGH ADHESION FORCES AT MICROMACHINE INTERFACES, 1998, PP. 106-122.						
	H. Zarrad, et al., THE USE OF LONG-CHAIN MOLECULES FOR THE LUBRICATION OF MICROMECHANISMS, 1993, pp.222-224.						
	Bradley K. Smith, et al., THIN TEFLON-LIKE FILMS FOR MEMS: FILM PROPERTIES AND RELIABILITY STUDIES, 1998, pp. 114-124.						
	M. Lemieux, et al., TRIBOLOGICAL PROPERTIES OF CHEMICALLY MODIFIED MEMS, pp.1181-1182						
	George M. Whitesides, UNCONVENTIONAL METHODS AND UNCONVENTIONAL MATERIALS FOR MICROFABRICATION, 1997, pp. 23-24.						
	S. Mubassar Ali, et al., USE OF THERMAL CYELING TO REDUCE ADHESION OF OTS COATED MEMS CANTILEVERS, 2003, pp. 151-162						
	Matthew G. Hankins, et al., VAPOR DEPOSTION OF AMINO-FUNCTIONALIZED SELF-ASSEMBLED MONOLAYERS ON MEMS, 2003, pp. 238-247.						
EXAMINER			DATE CONSIDERED				

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



<b>INFORMATION DISCLOSURE CITATION</b>  <b>PTO-1449</b>  SHEET 6 OF 6				ATTY. DOCKET NO. P19-US		SERIAL NO. 10/005,308	
				APPLICANT Satayadev R. Patel, et al.			
				FILING DATE 12/03/01		GROUP 2812	
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
<b>FOREIGN PATENT DOCUMENTS</b>							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
						<input type="checkbox"/>	<input type="checkbox"/>
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	W. Robert Ashurst, et al., WAFER LEVEL ANTI-STICTION COATINGS FOR MEMS, 2003, pp.213-221.						
	Daniel Flamm, et al., XEF2 AND F-ATOM REACTIONS WITH SI: THEIR SIGNIFICANCE FOR PLASMA ETCHING, 1983, 5 pgs.						
	Xenon Difluoride Etching System, 1999, 3 pgs.						
	U. Streller, et al., SELECTIVITY IN DRY ETCHING OF SI (100) WITH XEF2 AND VUV LIGHT, 1996, pp. 341-346.						
	M. J .M. Vugts, et al., SI/XEF2 ETCHING: TEMPERATURE DEPENDENCE, 1996, pp. 2765-2774.						
	Xuan-Qi Wang, et al., GAS-PHASE SILICON ETCHING WITH BROMINE TRIFLUORIDE, 1997, pp. 1505-1508						
	H. F. Winters, et al., THE ETCHING OF SILICON WITH XEF2 VAPOR, 1979, pp. 70-73.						
	Harold F. Winters, ETCH PRODUCTS FROM THE REACTION OF XEF2 WITH SIO2, SI3N4, SIC, AND SI IN THE PRESENCE OF ION BOMBARDMENT, 1983, pp. 927-931.						
	Xenon Difluoride Isotropic Etch System, SEEING IS BELIEVING, STS, 4 pgs.						
EXAMINER				DATE CONSIDERED			

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.





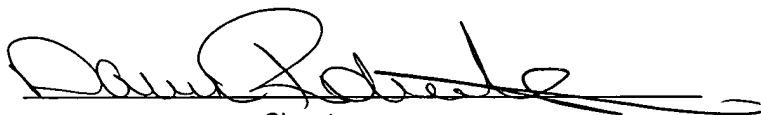
## Certificate of Mailing under 37 CFR 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

on

1/26/04  
Date

  
Signature

Dawn Roberts

Typed or printed name of person signing Certificate

Note: Each paper must have its own certificate of mailing, or this certificate must identify each submitted paper.

Information Disclosure Statement- 2pgs  
PTO 1449 form citing references, copies of cited references  
Return Receipt Postcard  
Serial No.10/005,308, Attorney Docket No. P19-US

This collection of information is required by 37 CFR 1.8. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.8 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.